REMARKS / DISCUSSION OF ISSUES

In response to the final Office action[1] mailed on 23 June 2009 ("Office action"), the applicants respectfully request reconsideration. All of the issues raised in the Office action have been carefully considered and are addressed herein.

Claims 1-20 are pending in the application.

I. Rejection of claims 1, 6-7, 12-14, 17, and 19 under 35 U.S.C. 102(e)

The Examiner rejects claims 1, 6-7, 12-14, 17, and 19 under 35 U.S.C. 102(e) over Mita (USPA 2003/0222594). The applicants respectfully traverse this rejection.

Mita fails to teach frequency modulating at least one of the first and second oscillating frequencies, as specifically claimed in each of the applicants' independent claims 1, 7, and 13.

The Examiner asserts that Mita teaches frequency modulation of the oscillating frequency at FIG. 3. This assertion is incorrect. Mita's oscillating frequency is not frequency modulated.

As is well known in the art, frequency modulation includes varying an oscillator's frequency based on an input signal:

> **frequency modulation**, *n. Abbr.* **FM**, The encoding of a carrier wave by variation of its frequency in accordance with an input signal (The American Heritage Dictionary of the English Language)
>
> **frequency modulation**, *Noun,* a method of transmitting information by varying the frequency of the carrier wave in accordance with the amplitude of the input signal (Collins Essential English Dictionary).
>
> **modulation** is the process of varying one waveform in relation to another waveform (Wikipedia).

Mathematically, frequency modulation is typically represented by the following formula[2]:

$$Y = A * \cos(2\pi f_c t + 2\pi f_\Delta \int_0^t x_m(\tau) d\tau)$$

[1] The Office action contains statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant(s) decline to automatically subscribe to any statement or characterization in the Office action.
[2] This is merely one example expression of frequency modulation; the applicants' invention and claims are not limited to this particular form of frequency modulation.

where Y is the frequency modulated output, A is the amplitude, f_c is the carrier frequency, f_Δ is the modulation coefficient, and x_m is the modulating input signal. Of particular note, the carrier signal is constant with respect to time, while the modulating signal x_m varies with time; without a signal x_m that varies with time while the carrier frequency remains constant, frequency modulation does not exist.

The applicants have found that by frequency modulating the oscillation frequency, the ratio of the high frequency ignition oscillation and low frequency operating oscillation can be significantly increased without introducing EMI and RFI problems. In the applicants' example embodiment, the AC power supply signal (typically at 50 or 60 Hz) is used to modulate the oscillation frequency

Mita does not teach varying the oscillation frequency in relation to another waveform, and thus cannot be said to teach frequency modulation of the oscillation frequency, as the terms 'modulation' and 'frequency modulation' are used in the art.

The Office action asserts that Mita's FIG. 3 illustrates frequency modulation of the oscillation frequency. The applicants respectfully disagree with this assertion. With regard to FIG. 3, Mita teaches:

> "FIG. 3 is a graph showing the relation between the output voltage at the time of starting the inverter circuit 19 in the first embodiment, and the steady lighting (lamp voltage VL), and frequency. As shown in FIG. 3, at the time of starting the operation of the high-pressure discharge lamp, the inverter circuit 19 is controlled to initiate oscillating at the frequency f01 higher than the resonance frequency f0. After that, the oscillation frequency is lowered closely to the resonance frequency f0. And when the glow discharge shifts to arc discharge, the high-pressure discharge lamp 12 is lit up. After the glow discharge to arc discharge transition voltage is completed, the high-pressure discharge lamp 12 is stably lit up at the frequency f1 lower than the LC resonance frequency f0 and residing in the stable operation window in which acoustic resonance never occurs." (Mita [0057].)

As is clearly evident, in the description of FIG. 3, Mita does not teach modulation of the oscillation frequency. Mita teaches changing the frequency from f01 to f0, and then to f1; Mita does not teach modulation at any of these oscillation frequencies. A change to a particular oscillation frequency is not equivalent to frequency modulation of that operating frequency.

Because Mita fails to teach frequency modulation of the oscillation frequency, as specifically claimed in each of the applicants' independent claims, the applicants respectfully maintain that the rejection of claims 1, 6-7, 12-14, 17, and 19 under 35 U.S.C. 102(e) over Mita is unfounded and should be withdrawn.

Further, with regard to the rejection of claims 6 and 12, the Examiner asserts that Mita discloses deriving a modulating frequency from an AC source. This assertion is incorrect and the Examiner fails to provide a basis for this assertion. The Examiner references Mita's FIG. 1, but fails to identify which element in Mita derives a modulating frequency from an AC source.

The applicant respectfully notes that it is the duty of the Examiner to specifically identify each and every element and limitation of a claim in the cited reference as per 37 CFR 1.104(c)(2) and MPEP 707, which explicitly state that "the particular part relied on must be designated" and "the pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."

If the Examiner continues to maintain this rejection, the applicants respectfully request that the Examiner identify the element in Mita that corresponds to a modulating frequency, identify the element in Mita that derives this modulating frequency from Mita's AC source 16, and identify the element in Mita that modulates the oscillation frequency with this modulating frequency.

II. Rejection of claims 2-5, 8-11, 15-16, 18, and 20 under 35 U.S.C. 103(a)

The Examiner rejects claims 2-5, 8-11, 15-16, 18, and 20 under 35 U.S.C. 103(a) over Mita. The applicants respectfully traverse this rejection.

Each of these rejected claims is dependent upon one of claims 1, 7, and 13, and in this rejection, the Examiner relies on Mita for teaching the elements of claims 1, 7, and 13. As noted above, Mita fails to teach the elements of claims 1, 7, and 13. Accordingly, the applicants respectfully maintain that the rejection of claims 2-5, 8-11, 15-16, 18, and 20 under 35 U.S.C. 103(a) that relies on Mita for teaching the elements of claims 1, 7, and 13 is unfounded, and should be withdrawn.

Further, with respect to claims 2-3, 8-9, 15-16, 18, and 20, the Examiner asserts that providing a ratio of the first and second oscillation frequencies between 2.2 and 7, or providing a ratio of approximately 5, is merely the subject of optimization. The applicants respectfully disagree with this assertion. Prior art devices have ratios less than these due to EMI and RFI constraints; by modulating the oscillation frequency, the applicants have overcome this limitation.

In like manner, with regard to claims 4-5 and 10-11, the Examiner asserts that providing modulation of less than 15%, or modulation of about 7% does not differentiate the device from prior art devices. This is incorrect. Prior art devices do not modulate the oscillation frequency; therefore a device operated with an oscillation frequency with about 7% modulation would be distinguishable from a prior art device operated without modulation. The circuitry and components required to provide modulation would clearly be different from the circuitry and components used in a prior art device.

Because Mita fails to teach or suggest the elements of claims 1, 7, and 13, and because the modulation of the oscillation frequency allows for higher frequency ratios, and because providing the modulation distinguishes embodiments of the invention from prior art devices, the applicants respectfully maintain that the rejection of claims 2-5, 8-11, 15-16, 18, and 20 under 35 U.S.C. 103(a) over Mita is unfounded, and should be withdrawn.

In view of the foregoing, the applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Please direct all correspondence to:
Corporate Counsel
PHILIPS IP&S
P.O. Box 3001
Briarcliff Manor, NY 10510-8001

Respectfully submitted,
/Robert M. McDermott/
Robert M. McDermott, Esq.
Reg. 41,508
804-493-0707